NON-PUBLIC?: N
ACCESSION #: 8712240085

LICENSEE EVENT REPORT (LER)

FACILITY NAME: CRYSTAL RIVER UNIT 3 PAGE: 1 of 4

DOCKET NUMBER: 05000302

TITLE: Accidental Grounding of the Unit Startup Transformer Leads to Interruption Offsite Power and Engineered Safeguards Actuation
EVENT DATE: 10/16/87 LER #: 87-025-00 REPORT DATE: 12/15/87

OPERATING MODE: 6 POWER LEVEL: 000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: L. W. MOFFATT, NUCLEAR SAFETY SUPERVISOR TELEPHONE #: 904-795-6486

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: On October 16, 1987, Crystal River Unit 3 was shut down in a refueling outage. At 2119, personnel working in the vicinity of the Unit Startup Transformer raised a metal pole and made electrical contact with a 230 KV feeder, interrupting the plant offsite power supply. The following significant events resulted: the Engineered Safeguards System Actuated, the "B" Diesel Generator started and loaded, normal power was lost to the security systems, and the reactor building purge isolated. Additionally, Power to the following was lost: one neutron monitoring channel, the Auxiliary Building Ventilation System exhaust fans, the control board annunciator and event recorder, and the Emergency Notification System phone. This event was caused by accidental grounding of the Unit Startup Transformer 230 KV feeder resulting in interruption of the offsite power supply. Electrical Distribution System lineups were restored to their pre-event status and the damaged 230 KV feeder was repaired. Work activities in the vicinity of the Unit Startup Transformer have been discontinued.

(End of Abstract)

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EVENT DESCRIPTION

On October 16, 1987, Crystal River Unit 3 was shut down (Mode 6 - Refueling) in a refueling outage. At 2119, contract craft personnel working in the vicinity of the Unit Startup Transformer (EA,XFMR) raised a metal pole and made electrical contact with the transformer 230 KV feeder, interrupting the plant offsite power supply. Two individuals were severely burned and hospitalized. One of these individuals has since died as a result of injuries received.

Plant conditions prior to the event were as follows:

o The "A" Emergency Diesel Generator (EK,DG) was out of service for planned maintenance and surveillance;

o The "A" 4160 V Engineered Safeguards Bus (EB,BU) was out of service for planned maintenance;

o The "A" 480 V Engineered Safeguards Bus (ED,BU) was cross-tied with (receiving power from) the "B" 480 V Engineered Safeguards Bus (ED,BU);

o The "A" and "C" inverters (EF,INVT) were out of service to facilitate testing of the "A" battery banks (EJ,BTRY);

o Vital Buses (EF,BU) normally powered from the "A" and "C" inverters were being supplied power from their alternate sources via the "A" 480 V Engineered Safeguards Bus;

o The plant computer alarm system (ID,ANN) was out of service for maintenance;

o Irradiated fuel (AC) was in the reactor vessel (AB,RPV) and decay heat was being removed via the "B" decay heat removal train (BP);

o The fuel transfer canal (DF) was flooded to the normal refueling level;

o The reactor building purge (BB) was in operation.

When offsite power was interrupted, power was lost to the "B" 4160 V Engineered Safeguards Bus, the "A" and "B" 480 V Engineered Safeguards Buses and the vital Buses being supplied through the "A" 480 V Engineered Safeguards Bus. The following significant events occurred as a result of these power losses.

o The Engineered Safeguards System (JE) Actuated due to the loss of

power to two of the three channels. The two channels which lost power were on vital buses being supplied through the "A" 480 V Engineered Safeguards Bus. The impact of the actuation was minimal because the plant was in mode 6 and many of the Engineered Safeguards System components were not in service.

o The "B" Emergency Diesel Generator (EK,DG) started and its output breaker closed, re-energizing the "B" 4160 V Engineered Safeguards Bus and the "B" 480 V Engineered Safeguards Bus. The "A" 480 V Engineered Safeguards Bus remained de-energized due to a designed lockout occurring on undervoltage concurrent with an Engineered Safeguards System Actuation.

o Normal power was lost to the plant security systems (IA). Compensatory measures were taken. A Security Emergency was declared at 2127. The Security Emergency was downgraded to a Security Alert at 2222, when the nature of the event was understood. The Security Alert was exited at 0500 on October 17, 1987. The security related aspects of this event are the subject of Security Event Report 87-S02-00.

o Power was lost to one source range neutron monitoring channel (JC,MON). This caused a loss of audible neutron flux indication required to be operable during mode 6 operations.

o The reactor building purge isolated due to a loss of power to the reactor building purge exhaust duct radiation monitor.

o Power was lost to the Auxiliary Building Ventilation System exhaust fans (VF,FAN).

o Power to the control board annunciator (IB,ANN) and event recorder (IQ,XR) was lost. This, combined with the unavailability of the computer alarm system, required entry into the Radiological Emergency Response Plan in the Alert status. The Alert was declared at 2130 and downgraded to an Unusual Event at 2210 after power was restored to the annunciator system. The Unusual Event was exited at 0249 on October 17, 1987 when plant conditions were returned to normal.

o Power was lost to the Emergency Notification System (ENS) phone (FI,TEL). Communications with the NRC were initially conducted using a commercial phone line. Power was restored to the ENS phone and communications were transferred to this line at 2149.

Offsite power was restored at 2218 when plant loads were connected to the Crystal River Units 1 and 2 Startup Transformer (EA,XFMR). The total time Crystal River Unit 3 was disconnected from an offsite power source was 59 minutes. Offsite power remained available throughout the event.

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CAUSE

This event was caused by accidental grounding of the Unit Startup Transformer 230 KV, which resulted in an interruption of the offsite power supply.

The Engineered Safeguards System actuation and loss of power to various systems and components was the result of the configuration that plant electrical distribution systems were in to allow maintenance.

EVENT ANALYSIS

The plant responded to the interruption of offsite power as expected. The Engineered Safeguards Actuation System functioned when power was lost to two of its three channels. However, because the plant was in mode 6 and there were no core alterations in progress, the event did not significantly impact plant safety.

It is unlikely that a loss of offsite power during reactor power operations would cause as many plant functions to be lost. The losses experienced during this event were the result of unique electrical distribution system lineups necessary for system maintenance and allowable only during a plant shutdown. The Crystal River Unit 3 Technical Specifications have strict requirements for maintaining electrical distribution system redundancy and independence during power operations.

CORRECTIVE ACTIONS

The 480 V Engineered Safeguards Bus cross-tie was re-established and power to the affected vital buses was restored at 2137. Offsite power was restored at 2218, when plant loads were transferred from the "B" Emergency Diesel Generator to the Crystal River Units 1 and 2 Startup Transformer. Electrical Distribution System lineups were restored to their pre-event status and the damaged 230 KV feeder was repaired. Plant loads were transferred back to the Unit 3 Startup Transformer at 0246 on October 17, 1987.

Work activities in the vicinity of the Unit Startup Transformer have been discontinued.

PREVIOUS SIMILAR EVENTS

A similar event occurred on October 14, 1987, when the "A" 4160 V Engineered Safeguards Bus was improperly de-energized in preparation for maintenance. That event is the subject of LER 87-021.

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Florida
Power
CORPORATION

December 15, 1987
3F1287-18

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Subject: Crystal River Unit No. 3
Docket No. 50-302
Operating License No. DPR-72
Licensee Event Report 87-025-00

Dear Sir:

Enclosed is Licensee Event Report (LER) 87-025-00 which is being submitted in accordance with 10 CFR 50.73.

Should there be any questions, please contact this office.

Sincerely,

/s/ E. C. Simpson
E. C. Simpson, Director
Nuclear Operations Site Support

WLR:mag

xc: Dr. J. Nelson Grace
Regional Administrator, Region II

Mr. T. F. Stetka
Senior Resident Inspector

A Florida Progress Company

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